Closing the Circle on the Splitting of the Atom

Earth contaminated with low-level radioactive waste from the Manhattan Project. *Hazelwood Interim Storage Site, Latty Avenue, Hazelwood, Missouri. January 29, 1994.*

Irradiated nuclear fuel in dry storage. *Building 603, Idaho Chemical Processing Plant, Idaho National Engineering Laboratory. March 17, 1994.*

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The Environmental Legacy
of Nuclear Weapons Production
in the United States
and What the Department of Energy
is Doing About It

The U.S. Department of Energy
Office of Environmental Management

Radiation-safety technicians check workers John Bower and Bill Milligan for possible contamination before they exit a Rocky Flats production building now undergoing cleanup. During the Cold War, the Rocky Flats Plant was the primary facility for processing and machining the plutonium used in nuclear weapons. *Rocky Flats Environmental Technology Site, Colorado. March 19, 1994.*

Letter from the Secretary

The United States built the world's first atomic bomb to help win World War II and developed a nuclear arsenal to fight the Cold War. How we unleashed the fundamental power of the universe is one of the great stories of our era. It is a story of extraordinary challenges brilliantly met, a story of genius, teamwork, industry, and courage.

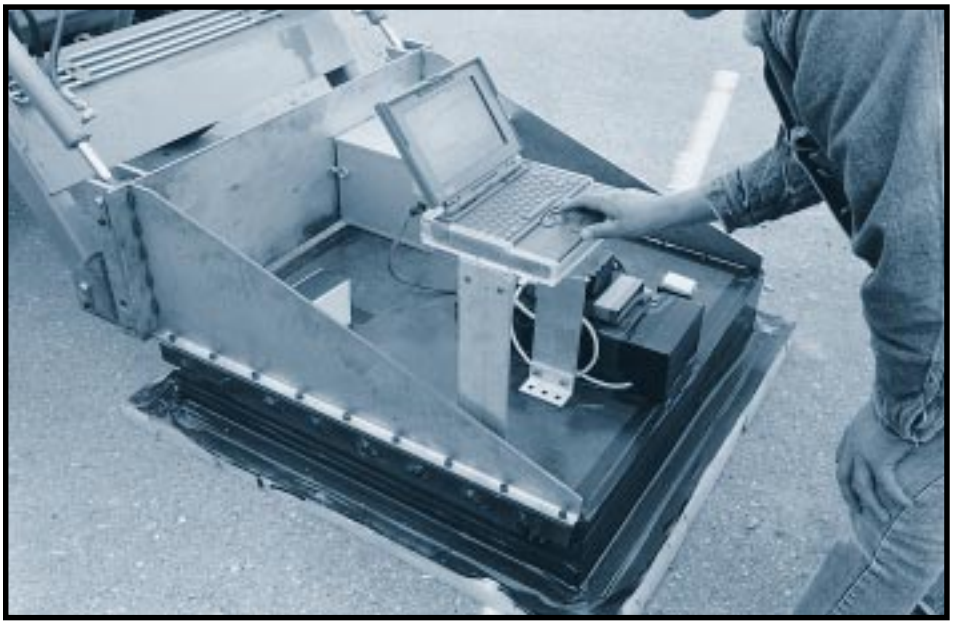
We are now embarked on another great challenge and a new national priority: refocussing the commitment that built the most powerful weapons on Earth towards the widespread environmental and safety problems at thousands of contaminated sites across the land. We have a moral obligation to do no less, and we are committed to producing meaningful results. This is the honorable and challenging task of the Department's Environmental Management program.

Although the war that gave us the atomic bomb ended half a century ago, and the Cold War that followed is now over, the full story of the splitting the atom has yet to be written. ***Closing the Circle on the Splitting of the Atom*** *reveals one of the story's biggest missing pieces. It describes the environmental legacy of nuclear weapons production in the United States and what the Department of Energy is doing about it.*

This story is being written in laboratories and at waste sites by scientists and engineers grappling with daunting waste and contamination problems. It is being written in state capitols, town halls, and board rooms by government officials, citizens and contractors developing new ways of doing business. And it is being written by tens of thousands of workers dismantling buildings, treating waste, safeguarding plutonium and caring for each other's safety in this dangerous mission.

In 1993 we launched our "Openness Initiative" by coming clean with our past and opening many of our files to the public. We did this to earn public trust and foster informed public participation in Government decisionmaking. This book will help advance this critical obligation by illuminating the challenges and accomplishments of nuclear weapons facilities cleanup and putting a human face on the work being done to close the circle on the splitting of the atom.

Hazel R. O'Leary
Secretary of Energy



The long-range alpha detector is highly sensitive to alpha radiation. This breakthrough in radiation monitoring picks up trace ions formed in air by alpha particles at a distance of several meters, allowing fast screening with quick results. *Los Alamos, New Mexico. February 24, 1994.*

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Introduction

In the grand scheme of things we are a little more than halfway through the cycle of splitting the atom for weapons purposes. If we visualize this historic cycle as the full sweep of a clockface, at zero hour we would find the first nuclear chain reaction by Enrico Fermi, followed immediately by the Manhattan Project and the explosion of the first atomic bombs. From two o'clock until five, the United States built and ran a massive industrial complex that produced tens of thousands of nuclear weapons. At half past, the Cold War ended, and the United States shut down most of its nuclear weapons factories.

The second half of this cycle involves dealing with the waste and contamination from nuclear weapons production – a task that had, for the most part, been postponed into the indefinite future. That future is now upon us.

Dealing with the environmental legacy of the Cold War is in many ways as big a challenge for us today as the building of the atomic bomb was for the Manhattan Project pioneers in the 1940s. Our challenges are political and social as well as technical, and we are meeting those challenges. We are reducing risks, treating wastes, developing new technologies, and building democratic institutions for a constructive debate on our future course.

The course of the environmental management program will be decided through broad public debate – both national and local. Where and how will we treat and dispose of the backlog of wastes from nuclear weapons production? How clean is clean? Should we exhume large volumes of contaminated soil in order to allow for unlimited use of the land in the future? Is plutonium a waste or a resource? To foster a sustained and informed public debate on these and other critical questions, we created this book. In it we use photographs as well as facts and figures, because only this combination can begin to convey the scale, the complexity, and the reality of the legacy we face, and the successes we have achieved so far.

Our hope is that this book will promote and inform broad-based citizen involvement so that we can move forward together in this difficult and compelling work.

- Thomas P. Grumbly,
Assistant Secretary for Environmental Management, U.S. Department of Energy